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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •

OCTOBER 31, 1936

Door for Ghosts

See Page 281

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The Weekly Summary of

Current Science

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DO YOU KNOW?

The American turkey crop this year is the biggest on record—20 million birds.

British automobiles and motor cycles are being designed to make less noise, to aid in the anti-noise campaign.

The tiny golden frogs of British Guiana are less than three-fourths of an inch in length.

Most fungi thrive on rain, but an exception is the powdery mildew common on red clover, which is adversely affected by rainfall.

A physician states that intelligent "mother love," rather than misdirected "smother love," is the first requisite in care of a child.

Automobiles that can use gas as fuel are expected to appear on the German market, and filling stations will then be equipped to sell this fuel.

Some tin cans carry yellow linings, because the enamel thus applied keeps red fruits from bleaching and keeps certain other products from discoloring.

Sharks of tropical seas are considered more ferocious than those of cooler waters.

Hunting the great American, or bald, eagle from airplanes is a new sport deplored by a California zoologist.

Shrubs planted around a house should be set at least 20 inches from the foundations, lest they suffer from too much dryness.

Government scientists are working on a new line of canned soups, ice cream mixes, and other foods in which whey will be used as a milk constituent.

Forest experts say that prejudice against lumber from dead trees is not justified; that lumber from trees killed by insects or fire is just as good as lumber from live trees of similar soundness.

Bone combs to adorn high headdresses, and spoons made of mammoth bones are among discoveries from ruins of an ancient settlement of about 200 A.D. found by Soviet archaeologists in Siberia north of the Arctic Circle.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

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BIOLOGY

Operate on Tiny Insect in World's Most Minute Surgery

Creature Only Sixth of an Inch Long Is Worked on Under Microscope With Glass Needles for Knives

SURGICAL operations of incredible delicacy are used for the transplantation of eyes, sex glands, legs, wings, and other organs of tiny insects the size of ordinary gnats, by two young scientists, Drs. Boris Ephrussi and G. W. Beadle. Dr. Ephrussi is a Frenchman, Dr. Beadle an American. The work was begun in Paris, at the Institute of Physico-Chemical Biology, and has been continued at the William G. Kerckhoff Laboratories of the Biological Sciences at the California Institute of Technology. The insects operated on are the favorite experimental animals of geneticists, the handy little fruit-flies known more learnedly as *Drosophila*. They are subjected to the transplanting technique while still infants, in the larval or grub stage.

Although even the largest of these larvae are only a sixth of an inch long and a twenty-fifth of an inch in diameter, both scientists work at the same specimen at the same time.

The operating table is a small glass laboratory dish, and the two biologists work with hollow glass needles, drawn out to hair-line fineness. Each man watches through a double-barreled microscope. With the needles they pluck up the rudimentary "buds" of organs which have been dissected out of one larva, and inject them into the body of another.

The "host" larvae, with their added transplanted organs, are then placed in an incubator and kept at a temperature of 77 degrees Fahrenheit for four or five days, during which time they transform themselves first into pupae and then emerge as full-grown fruit-flies.

Not Useful

Some of the transplanted organs, of course, are never of any use to the insect that has acquired them. An eye grafted into the abdomen of a fruit-fly becomes a perfect eye, but because it lacks the proper nerve connections does not help its unconscious possessor to see.

On the other hand, transplanted ovaries often successfully make connection with a female insect's egg-laying apparatus, and these then function quite as well as the owner's original pair. Drs. Ephrussi and Beadle have even transplanted the ovaries of one fruit-fly species into a female of another species, mated the female with a male of her own species, and thus produced hybrid offspring, the actual, biological mother of which was dead several days before her eggs were fertilized and laid.

Important Purpose

These experiments have a purpose decidedly more serious than just showing that so difficult a biological stunt can be carried through successfully. *Drosophila* has been the most important organism for demonstration of the basic principles of heredity ever since Dr. Thomas Hunt Morgan, now director of the biological laboratories at the California Institute of Technology, carried out the pioneer researches in this particular field many years ago. But certain tissue transplantation work, of value in studying these principles, has hitherto been possible only with larger but less understood animals, like large insects, fishes, and frogs. It is for this reason that geneticists and biologists generally have taken a particularly keen interest in the work of Drs. Ephrussi and Beadle.

A PATIENT

This is how one of the tiny patients looks under the microscope. It is a matured insect having an extra eye transplanted onto the back of the body.

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BACTERIOLOGY

Germ Killer Makes Some Germs More Dangerous

BACTERIOPHAGE, an ultramicroscopic bacteria killer, can change the germs of typhoid fever so that they will do some of the things that make those of scarlet fever and erysipelas so dangerous, Dr. Jeanette D. Taranik of Stanford University has discovered. (*Proc. Soc. Experimental Biology and Medicine*, June.)

One of the most dreaded and dan-

DELICATE

Using hair-fine glass needles for instruments, and observing their patient through microscopes, Drs. Boris Ephrussi (left) and G. W. Beadle are operating together on the larva of a gnat-sized fruit-fly.

gerous of all disease germs is the variety which attacks blood corpuscles and destroys them. It is this kind which is responsible for a whole host of diseases, including scarlet fever, a kind of blood-poisoning that is particularly dangerous, a kind of meningitis, and a particularly virulent variety of peritonitis. Its chief characteristic is this breaking down of red blood corpuscles.

Most other germs do not have this ability, but it is possessed by a particularly resistant form of typhoid bacterium which Miss Taranik produces. She reports that she fed bacteriophage on typhoid bacteria, until most of the germs had been killed and "eaten." Then she grew the few germs which remained, to find that they now had not only all their old virulence, but also this new ability of destroying red corpuscles.

Meanwhile, Dr. Sophie Spicer of the New York Board of Health, who specializes on the red-blood corpuscle destroyers, has done the exact opposite of Miss Taranik's experiments (*Journal of Bacteriology*, July). She exposed some of her erysipelas and scarlet fever organisms to high heat, high acidity, or small amounts of chemicals, and was able to make them less able to destroy red blood corpuscles.

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ASTRONOMY-GENERAL SCIENCE

Earth May Meet Rusty End, Princeton Astronomer Thinks

DEATH by rusting, rather than by freezing when the sun goes out, or in the apocalyptic fires of a Judgment Day, may possibly be the eventual fate of the earth. This suggestion is made by Prof. Henry Norris Russell, Princeton University astronomer, writing in the new annual report of the Smithsonian Institution.

Oxygen, as everybody now knows, is the real essence of the breath of life. If it were to be wholly removed from the atmosphere of this planet, we should all perish—mouse and man, toadstool and tree. Some rocks contain oxygen, locked up in chemical combination. Sometimes this combination can be cracked, as by volcanic action. Then the oxygen is turned loose, largely as carbon dioxide.

Carbon dioxide is still unbreatheable, but it is eagerly seized upon by plants, which extract the carbon for food manufacture, and return half of the oxygen free. Thus the atmosphere is replenished.

But there are other rocks, very abundant, too, containing iron in the partly oxidized "ferrous" form. This ferrous oxide is thirsty for more oxygen, to complete its transformation into the "ferric" form. Ferric oxide is most familiar to us as common iron rust, but it is also responsible for most of the common red rocks and soils. Iron locked in this compound is permanently out of circulation.

Prof. Russell suggests that eventually the ferrous minerals will absorb all the oxygen in the air, or yet to be released into the air, locking it all up in ferric minerals. The earth will then be without the oxygen-breathing life as we know it. This stage may perhaps already exist on Mars, the rust-red planet.

But it is not due to arrive here tomorrow or the next day. Perhaps in a billion years, says Prof. Russell.

Many Have Watched Skies

Reports from many watchers of the skies, whether of remote nebulae and stars, or of the nearer planets and satellites, or of the doings of the earth's own intimate envelope of gases which we call the atmosphere, are found in the new Smithsonian report.

Possibilities of long-range weather forecasting are discussed by the Smithsonian Institution's secretary, Dr. Charles G. Abbot, and by a British "guest writer," Sir Gilbert T. Walker. Dr. Abbot's approach to earth's weather is through the sun's radiation, a subject he has studied for many years. Sir Gilbert sticks to earth, finding correlations between weather today in one part of the earth and the weather some months hence in another place.

The sun's place among the stars is described by Dr. Walter S. Adams, and the surface of the moon by Dr. Frederick E. Wright, both of the Carnegie Institution of Washington. Cosmic rays are the subject of Dr. Thomas H. Johnson of the Bartol Research Foundation, of the Franklin Institute, and Dr. G. M. B. Dobson of the University of Oxford has a chapter on the upper atmosphere.

At Our Own Level

More strictly mundane matters, pertaining to the earth beneath and the waters that are under the earth, also receive their due meed of attention. A woman scientist on the Smithsonian staff, Dr. Florence E. Meier, gives a survey of those important but lowly and little noticed plants, the algae. Her colleague, Austin H. Clark, tells in some detail of swallow-tail butterflies. Another Smithsonian staff member, Dr. Ales Hrdlicka, relates his archaeological adventures in Alaska, which have opened up new vistas on the much-vexed question of man's antiquity in America.

That veterans are not necessarily too stiff-minded to be interested in new projects is well demonstrated by one of the most widely known of the "guest writers," the late Louis Blériot, one of the world's earliest flying men who died only about a month ago. Under the title of "Wings Over the Sea," he described approvingly the Armstrong scheme for establishing floating landing fields in the middle of the Atlantic.

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OBITUARY

Marlen E. Pew

FOR many years Marlen E. Pew was an editor among editors—the pilot of the newspaperman's own journal, *Editor and Publisher*. For this reason his death on Oct. 15 will be felt in every newspaper office in the land. He was a champion of weak and strong alike in their rights to say what they thought without hindrance. Press freedom was a practical passion with him.

Another phase of Pew's journalistic career was not so well known. He was one of that band of scientists and newspaper men who serve as trustees of Science Service. For nine years he served as one of the three representatives of the journalistic profession on Science Service's board, and for most of that period he was a member of the executive committee of the board. He was a pioneer in urging expert, accurate and yet interesting reporting of science in the daily press. And by his counsel he contributed largely to Science Service's success.

Both scientific and newspaper worlds owed him thanks and will miss his constructive endeavor.

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PSYCHOLOGY

To Voters There Is Much in A Political Party Name

Certain Names are Approved or Disliked Regardless Of Whether Their Platforms Accord With Voters' Views

VOTERS who go to the polls next Tuesday may be casting their ballots for a party name that they like instead of for the policies that they approve.

House-to-house interviews with voters in an agricultural county in Pennsylvania revealed that there, at least, individuals may be violently opposed to a party and yet be in favor of its principal planks. Actually the voters interviewed were in favor of worker-ownership of industries, reduction of huge fortunes, government-ownership of railroads, government old-age insurance, and the other typical policies of the Socialist party. But they prefer the Republican party!

The results of this canvass of voters is just made public by Dr. George W. Hartmann of Teachers' College, Columbia University, who made the study, in a report to the current issue of the *Journal of Social Psychology* (August).

The voters interviewed indicated their preference for a group of 22 political party names, including, along with the principal parties in next week's election, several names that were fictitious or belonging to obsolete parties. The old-line parties, Republican and Democratic, led in preference as might be expected. But Farmer-Labor was also high in popularity although a party with this name has never had any candidates in the region where the canvass was made. Labor party and Workers' party were next in order of preference, and they were followed by Socialist. At the very bottom stood Technocratic and Communist.

Voted on Policies

In addition to indicating their liking for the party names, the citizens interviewed "voted" on 20 statements of governmental policy involving significant social and economic problems. These were so selected that definite approval of 10 specific items would indicate a thoroughgoing radicalism. Complete conservatism would be shown by corresponding agreement with the remaining 10 propositions.

A clear majority of this group of 168 representative citizens, who were mainly farmers, miners, laborers, small shopkeepers, housewives, and clerks, voted radical or left. Yet these same voters placed the Republican party first in their preference and the Democratic party second.

Republican Socialism?

"The population of this study apparently would prefer to have the Republican party be the vehicle for introducing socialism to America," comments Dr. Hartmann. "Whether this behavior is as unrealistic as the belief that the Pope might be converted to Protestantism, as Luther appears to have hoped originally, can only be determined by future development."

Politicians are advised by Dr. Hartmann to make a psychological study in other localities of this preference or antipathy for certain party labels just as modern advertisers study what brand name will be pleasing to their potential customers. The Socialist party, he pointed out, might gain votes by changing the name to Farmer-Labor or Labor.

A check-up on these results with other groups of voters in a mining community and two industrial suburbs of Philadelphia brought confirmation.

An incidental question put to the voters showed that they do not consider the brain truster a political outcast. More than 71 per cent put their okay on the college professor in political office. Of these, 20 per cent thought he would be "very satisfactory" and nearly 10 per cent agreed that he would be "better than a man in any other line of work."

This finding was of personal interest to Professor Hartmann, as he has entered the race for political office as a part of his experiments in the psychology of politics.

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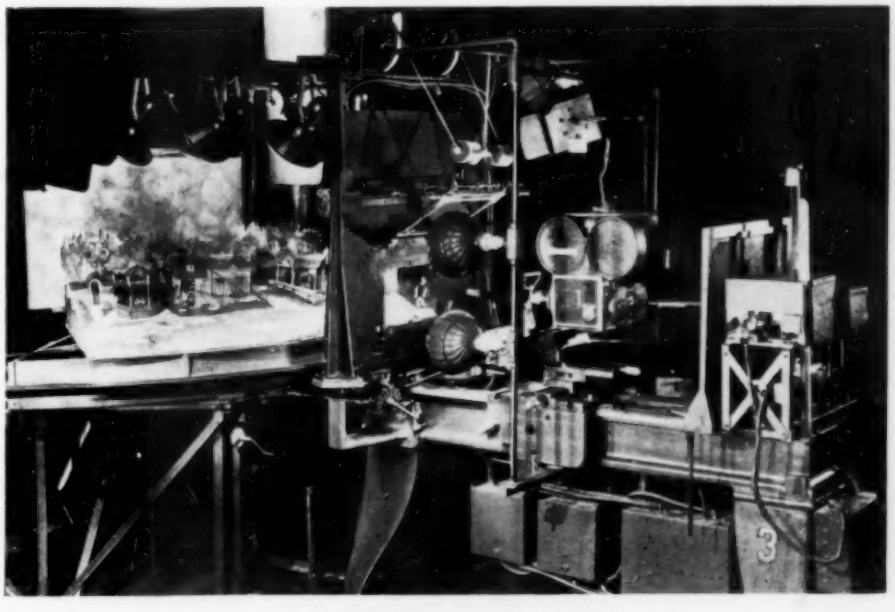
SEISMOLOGY

Venice Earthquake Not Really a "World-Shaker"

THE earthquake that shook up Venice, Italy, on Sunday, Oct. 18, was not of the "world-shaker" type; that is, it did not register its occurrence on distant seismographs. The sensitive instruments in the United States, Canada, and



DEPTH FOR CARTOONS

Cartoon characters go on the stage in the newest technique of movieland which brings improved perspective and a feeling of a third dimension to the viewing audience. This is the equipment at the Fleischer Studios in New York, with familiar Pop-eye the Sailor in the foreground being photographed against the miniature three-dimensional stage setting. As the cartoon figure moves about in the foreground, the background slowly rotates so that objects near at hand move faster than those far away as they seem to do in life.

the Pacific area that usually pick up a really severe disturbance anywhere, no matter how distant, showed no trace of it.

However, Venice could be really severely damaged by even a minor local earthquake, for the city is a veritable "set-up" for seismic trouble. It stands on a group of low, sandy islands off the coast, and this kind of shifting ground is exactly where an earthquake can play the most mischief. The constant additions to the sand and silt load on the sea bottom, brought down by the Po and the lesser rivers of the Venetian plain, are in themselves contributors to eventual earthquake disturbances. By lightening the load on the land, and increasing it on the sea bottom, they set up strains that in the end find their relief through earthquakes.

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PUBLIC HEALTH

Starvation Record Set as Ticks Survive for Five Years

Twelve Texas Ticks Get Their First Meal in Half Decade Showing Surprising Longevity and Endurance

A STARVATION record has fallen as 12 Texas ticks got their first meal in five years—blood sucked from a monkey.

A record for longevity in the tick world was broken at the same time in the laboratories of Dr. Edward Francis of the U. S. Public Health Service's National Institute of Health, where the ticks dwell in little wooden boxes that look like apartment houses set on sand.

The starvation and longevity records have interest to others than just scientists, however; they are an unpleasant menace to the longevity of man.

These ticks harbor the germ of relapsing fever, a disease with symptoms something like those of malaria and with a 50 per cent mortality in some parts of the world. There have been 250 cases of this disease in Texas in the last six years, none of them fatal, however.

The ticks are not the ordinary wood ticks but belong to the species *Ornithodorus turicata* and are found only in Texas, Arizona, California and Colorado.

Ticks Live Without Food

The amazing thing about these ticks is the length of time they can go without a meal. Twelve of them have lived for the past five years without any food at all. Not only that, but these ticks on their diet of what Dr. Francis terms "thin air" have been able to nourish in their starved bodies the spiral germs that cause relapsing fever.

Five years ago 130 of the ticks arrived from the Blue Bug Cave in Texas where they made their home in the sandy dust. The cave gets its name from the ticks which have a blue color when they are full of blood. When they arrived they were given a meal of monkey blood. The monkey they bit promptly got sick with a bout of relapsing fever.

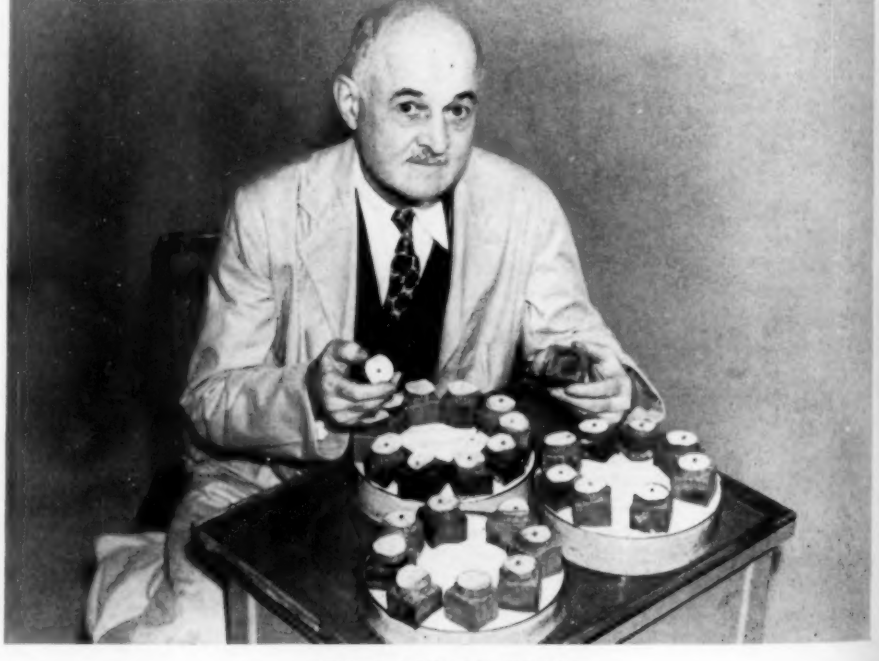
Some of the ticks got killed by accident and Dr. Francis gave some of them away to other scientists who wanted to study them. There are 36 of them still living in his laboratory, where they are kept in 2-inch square pine boxes covered with tightly-fitting cork stoppers. The boxes are kept in trays of slightly moistened sand and a very little of the moisture makes its way through the walls of the pine box to the space occupied by the ticks. Dr. Francis says their board bill has been cheap.

One dozen of the surviving 36 had a meal of monkey blood after three years. Another dozen were fed after four years. The last 12 got their first meal in five years just the other day.

"They were flat as a flitter," Dr. Francis said, "when we let them bite the monkey, because they had gone so long without food. But these ticks are fast feeders. Within half an hour they had gorged themselves full of monkey blood."

The monkey is now sick with relapsing fever, showing that the spirochetes of this disease were able to stay alive five years in the starved ticks' bodies. Dr. Francis thinks the ticks and the spirochetes can live indefinitely. He has put them in his will, so that if they survive him, some other scientist will be entrusted with the job of keeping them and studying their longevity.

This five-year survival of both starved ticks and the relapsing fever germs within them show that there is no hope



VILLAGE OF TICKS

In wooden pill-box-like houses built upon the sand, Dr. Francis displays the record-holding ticks. The village is surrounded with antiseptic material that will kill the inhabitants should they stray.

WORLD RECORD HOLDERS

These ticks, carriers of relapsing fever, have lived without food for five years in the laboratory of Dr. Edward Francis at the U. S. Public Health Service in Washington, D. C.

of exterminating the ticks, Dr. Francis explained. The menace of relapsing fever will have to be fought by some other means.

Relapsing fever, which can also be spread by body lice, has been known for centuries in Europe, Asia and Africa, but has not been much of a problem in the United States. A few small epidemics were reported in this country in the last century but in these cases the disease seemed to have been brought in by immigrants. Until about six years ago there was no evidence of its occurring naturally in the United States. Then from Texas came reports of an outbreak following a camping trip made by a group of boys.

Lived in Caves

"The boys, of course, had to pick some outlandish place for their camp," Dr. Francis related, "so they chose some caves down there in Texas. Later, after they had returned to their homes they began, one by one, to get sick."

The symptoms were fever, chilliness, headache and other pains, followed by a rash and profuse perspiration, after which the patients seemed to recover, only to get sick again four or five days later. These relapses are what gives the disease its name. During the third relapse, the spiral-shaped germs called spirochetes were found in their blood and the disease was diagnosed as relapsing fever.

Seized by Fever

Some of the doctors started investigating the source of the disease and one of them, Dr. G. M. Graham of Austin, Tex., went into the cave where the boys had camped. He came out covered with ticks and six days later he had relapsing fever. Fortunately, the disease as it now occurs in Texas is not fatal. The patients recover after several relapses, even if untreated. But there is an effective medicine for it. Doses of arsphenamine, given a week apart, cured the boys after their ailment was diagnosed. It had at first been mistaken for malaria because of the similarity of the symptoms.

After Dr. Graham's investigation, some of the ticks were collected and shipped to Dr. Francis for study. They do not carry any other disease, he says, and apparently they live by sucking blood from men, possums, cattle, horses, pigs, gophers or other animals that wander into the caves where they normally live.

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The life of leather in books or furniture can be greatly lengthened, chemists have found, by using common salt in the tanning process.

The wasp's method of chewing wood into pulp to make paper for building his house is pronounced very similar to the paper-making methods of big factories.

GEOPHYSICS

Earth's Electric Currents Form Gigantic Crust Eddies

DISCOVERY of electrical circuits in the earth's crust that whirl around a number of points, both in the polar regions and in more temperate climes, was reported to the International Union of Geodesy and Geophysics in Edinburgh by O. H. Gish and W. J. Rooney of the Carnegie Institution of Washington's Department of Terrestrial Magnetism.

The crustal electric currents are believed to form 16 extensive eddies. Eight of these are located in the middle and low latitudes. Four in the Northern Hemisphere and four in the Southern Hemisphere form a symmetrical arrangement about the equator. The centers of these eddies are about equally spaced in longitude and lie near the tropics of Cancer and Capricorn, respectively.

Four other eddies also appear in high northerly latitudes with their centers near the arctic circle. These also are about equally spaced in longitude. A corresponding set of eddies presumably exists in high southerly latitudes, but data to establish the fact are not available.

"All these eddies follow the sun in such a way that eight of them are always on the sunlit side of the earth and eight on the dark side," the American scientists reported. "The current in the daylight eddies of middle latitudes is considerably greater than that in the corresponding night-time eddies. However, a contrast of this character is not a common feature of the circulations constructed from data obtained at high latitudes. The centers of the forenoon eddies in middle latitudes lie near the meridian for which the time of day is 9 a.m., while the afternoon eddies center on the meridian for which the time is about 3 p.m. This feature varies between stations by as much as two hours. The current circulation is clockwise in the forenoon eddy of the Northern Hemisphere and in the afternoon eddy of the Southern Hemisphere. The sense of the circulation in the other middle-latitude eddies may be ascertained by applying the rule that the sense of circulation is opposite in any two adjacent eddies of corresponding latitude. Thus circulations in the eight eddies of the middle-latitude belt are related in the same way as are the rotations in a series of interlocking gears when oriented in a manner similar to that of these eddies.

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ZOOLOGY

Gibbon Bears Daughter; Very Rare in Captivity

ONE of the rarest of births to occur among animals in captivity has taken place in the zoological gardens at Aarhus, Denmark. The gibbon Mimi has had a daughter.

Gibbons seldom thrive in captivity in northern latitudes, and this is the first time in the history of European zoological gardens that one has produced offspring.

Mimi, however, does not as yet evince much interest in her baby daughter, Augusta. She refuses to suckle it, and Director Hutzelsieder has therefore been obliged to give the baby gibbon a bottle. He has hopes that Mimi may learn to love the infant when she gets to know it a little better.

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SURGERY

Treatment of Injuries of Major Importance Nowadays

SIMPLE things are likely to be overlooked, Dr. Eugene H. Pool, president of the New York Academy of Medicine, told his learned audience at the opening session of the Graduate Fortnight of that institution. Common injuries are lightly touched upon in medical schools and at surgical meetings, yet modern conditions, changes in transportation, and the enormous growth of industrial enterprises, as well as new methods of warfare, have all made the treatment of injuries of primary importance to the modern world.

New types of injury have been created by new means of transportation, and rare types have become common, Dr. John J. Moorhead of New York City reported to another session of the same meeting.

Nearly two-thirds of the injuries are due to vehicles, Dr. Moorhead said, while only one-fifth occur in industry. Because of increased use of the automobile and airplane in transportation, he went on, the doctor in the most remote hamlet may be called upon at any time to treat grave injuries of some leading citizen of our country.

"The initial care given to the injured may determine the entire outcome," he pointed out. "Immediate treatment usually means easy treatment and early recovery." In addition to early treatment, he advised that shock and hemorrhage should be immediately treated and pain promptly relieved. Anesthesia should be used more generally than it now is, he said.

Treating injuries, according to Dr. Moorhead, "is in the gadget stage of development, but complicated and fancy apparatus is more of a burden than a benefit. Safety first is the slogan in traumatic surgery; next is speed and next simplicity."

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METALLURGY

Scientists Check Steel After 20-Year Test

ON THE SHORES of the Severn River, in Maryland, engineers and scientists from all over the East gathered recently to inspect some steel plates which, 20 years ago, were put outdoors to begin a lifetime of corrosion tests.

From the corrosion studies in the salty air of Annapolis, the American Society for Testing Materials has been able to make recommendations to industry on improved corrosion-resisting metals. In the railroad field, as only one example, the steel floor plates in hopper cars now have their useful life increased from four to five years because it was found that a mere two-tenths of one per cent of copper added to the steel made it much more rust-resisting.

Another finding has been that a trace of phosphorous mixed with copper in steel is even better as a corrosion-resisting agent.

Previously it had been supposed that phosphorous in steel was harmful and something to avoid with great care.

Outgrowth of the corrosion studies has been to stimulate research on still higher alloys of copper and steel with the result, very recently, that high strength steels are now on the market which contain appreciable amounts of both copper and phosphorous.

The Annapolis studies have been part of a broader program which included the placing of test steel sheets in the smoky industrial atmosphere at Pittsburgh, Pa., and in a rural type atmosphere in Fort Sheridan, Ill. The Pittsburgh tests continued over six years and the Fort Sheridan project for eleven. The Annapolis plates, now at their 20th anniversary, are far and away the leaders in point of time.

Other corrosion studies include exposure of iron and steel sheets in filtered drinking water, brackish water, acid-mine water and seawater.

Science News Letter, October 31, 1936

IN SCIE

SEISMOLOGY

Earthquake Center Was North of Matanuska

THE REGION of Anchorage and Matanuska, Alaska, was shaken by a strong earthquake on the night of Thursday, Oct. 22. The epicenter, as determined by scientists of the U. S. Coast and Geodetic Survey on the basis of telegraphic data transmitted through Science Service, was in latitude 62 degrees north, longitude 149 degrees west. This is a spot about sixty miles north of Anchorage, forty miles north of Matanuska. The quake began at 9:24.4 p.m., Alaska time.

Seismological observatories reporting were those of Canisius College, Buffalo, N. Y.; Pennsylvania State College; Fordham University, New York City; the private observatory of Mrs. M. M. Seeburger, Des Moines, Iowa; Georgetown University, Washington, D. C.; the University of Wisconsin; Weston College, Weston, Mass.; the University of California; Dominion Observatory, Ottawa; Dominion Meteorological Observatory, Victoria, B. C.; and the U. S. Coast and Geodetic Survey, Chicago.

Science News Letter, October 31, 1936

PSYCHIATRY

Syphilis Causes Tenth of Mental Disease Cases

NEARLY one-tenth of mental disease is caused by syphilis of the nervous system.

This figure, reported by Drs. Merrill Moore and H. Houston Merritt of Boston (*Journal, American Medical Association,* Oct. 17), is based on a survey of the records of over 40,000 mentally sick patients admitted to the Boston Psychopathic Hospital between 1912 and 1934.

The survey showed that there were 26,437 first admissions of mentally sick patients. Patients admitted for a second time, or found after admission not to have mental disease were excluded from the study. Syphilis of the nervous system was found to be the cause of the mental disease in 2,468 of the 26,437 first admissions.

Science News Letter, October 31, 1936

FIELDS

GENETICS

Fraternal Twins, Not Identicals, Rare in Japan

TWINS are far more common in America than they are in Japan. This latest report on multiple births may be significant in deciding racial origins of Oriental peoples.

Key difference between Japanese twins and those of other racial groups, according to a report by two Japanese scientists, Taku Komai and Goro Fukuoka of the Kyoto Imperial University, is that the fraternal type twin is the rare one (*American Journal of Physical Anthropology*, July-Sept.).

Fraternal twins, that develop from two egg cells, are ordinary brothers or sisters that chance to be born at the same time. These twins may not look alike or act alike, and they may be of different sexes. In Japan, such twins are found only a fourth or a third as often as in European and Negro families.

Identical twins, on the other hand, are discovered to be not uncommon in Japan. These twins, who owe their origin to a single egg cell, and who are duplicate individuals, are a type that occurs as often in Japan as in other countries.

Owing to the scarcity of fraternal twins in Japan, the occurrence of twins there happens only once in 141 births, so the Japanese scientists determined from the evidence they consider most reliable—records of midwives.

This figure is in striking contrast with Negro families in the United States, that have twins once in 67 births, and with white families, that have twins once in 87 births.

That twins are not often seen in Japanese families is a fact that keen observers had long pointed out. But heretofore, scientists have been baffled when they sought satisfactory statistics. Official birth records were, they knew, not full evidence. Japanese families, especially in some country districts, cling to an old superstitious feeling that twins are an unhappy event, and some cover up the matter by reporting one birth for two.

More complete figures were obtained by Mr. Komai and Mr. Fukuoka by studying hospital birth records and midwives' records, particularly the latter.

Fraternal twins are relatively scarce among all Mongolian peoples, the investigators believe, for they found this to be the case among Koreans and among Formosans of Chinese origin.

The Japanese scientists see a possible significant point in finding twins less rare among Koreans than among Japanese and the proportions of the sexes different. This may imply racial difference between these peoples.

Another significant discovery is that fraternal twins are, curiously, not nearly so scarce in one province of Japan. This province is Okinawa, in the far south, inhabited, as many scientists believe, by descendants of Japan's mysterious aboriginal people. The curious difference in regard to twins may have some bearing on the much discussed question of their racial identity.

Science News Letter, October 31, 1936

NUTRITION

Man Can Live on Meat If He Only Gets All of It

CIVILIZED methods of butchering meat are brought into the old scientific controversy over the possibility of man living on an exclusively meat diet in a discussion by the noted explorer, Dr. Vilhjalmur Stefansson, as reported in the journal, *Science*.

Guinea pigs fed only lean meat develop scurvy, but Dr. Stefansson and his companion, Karsten Andersen, lived for a year on an exclusive meat diet for experimental purposes without developing scurvy. The discrepancy is explained usually either on the ground that there is some difference between men and guinea pigs, or that the meat diet of the two explorers occasionally contained liver which is rich in scurvy-preventing vitamin C. Carnivorous men, such as Eskimos, who live chiefly on meat are thought to escape scurvy because they eat the liver and other vitamin-C containing organs as well as the lean meat.

Dr. Stefansson explains the scurvy-protection which carnivorous men have on the ground that the meat they eat contains a great deal of blood. This is also true of the meat eaten by northern explorers or others who live by hunting.

"But our butchers are careful to bleed animals," Dr. Stefansson points out. "A given weight of animal food as consumed by an Eskimo therefore contains a considerable proportion of an ingredient nearly absent from butcher's meat."

Science News Letter, October 31, 1936

ARCHAEOLOGY

Tombstone Proper Exit for The Hallowe'en Spirits

See Front Cover

IF YOU see a Hallowe'en ghost rising spookily from behind a tombstone in ye olde graveyard, night of Oct. 31, don't laugh.

For tombstones are the proper and conventional exit doors for spirits. No less authorities than the ancient Egyptians established that point of behavior thousands of years ago.

A tombstone is merely a door with the house missing. So it appears from study of Egypt's ancient arrangements for life in the spirit world.

At the Field Museum of Natural History, Dr. T. George Allen has just completed a study of the stelae—stone monuments—that the museum has obtained from Egypt. Most of them are tombstones, decorated with scenes once painted in red, blue, black, yellow and brown of Egyptian art, and bearing names, prayers and religious thoughts.

Two ideas blended, it appears, to produce the invention of tombstones: an inscription and a spirit door.

Kings of Egypt from the first dynasty, almost 3400 B.C., had round-topped stelae—the familiar tombstone shape—included in their simple tombs, with inscriptions on them.

Then came the age of giant pyramid tombs for Egypt's kings. The pharaohs who planned their pyramids with keenest interest included in the rooms a place or places where the faithful living could go to put offerings for the dead. These offerings, Dr. Allen explains, would be deposited on an offering-table and let down into the ground before a niche inscribed under the owner's name and titles. And the niche was so shaped that archaeologists call it a "false door." For through this fake doorway, never intended to swing open to human touch, the spirits of the dead kings were supposed to pass, when they returned from the realm of the dead to eat and enjoy the offerings.

Later in Egypt, the common man copied kings and began to provide cautiously for his own welfare in the future world.

"His tomb was relatively small and simple," says Dr. Allen. "But the false door of the Old Kingdom had survived in the guise of a tombstone or stela set up to mark his resting place."

Science News Letter, October 31, 1936

ASTRONOMY

Saturn Rides High

November Is a Good Time to View Planet With Its Interesting Rings, Which This Year Disappeared

By JAMES STOKLEY

WITH Saturn high in the evening sky this month, it is a good time to look at it through a telescope. Most observatories connected with colleges in various parts of the country have certain nights when their instruments are available for the public. And for people who live in the vicinity of Philadelphia, New York, Chicago, or Los Angeles there are telescopes associated with the planetaria in these cities. Saturn is always one of the most popular objects displayed to the visitors to these institutions, because of its unique rings. These form a huge system, the outside diameter about 171,000 miles. There is a space of about 7,000 miles between the inner part and Saturn's equator. The diameter of Saturn itself, through the equator, is about 74,000 miles. These rings are not solid structures, as might be supposed at first glance through a telescope, but are a vast swarm of tiny moons, all revolving around Saturn so close together that they appear continuous from the distance of earth.

Huge though it is in diameter, the ring system is exceedingly thin, not more than 10 miles in thickness. As Saturn goes around the sun every 29½ years, there are two periods when the earth passes through the plane of the rings. Saturn, on the average, is 885,-900,000 miles away, and a thing only 10 miles in diameter at that distance can hardly be seen with even the biggest telescope. On such an occasion, therefore, the rings disappear as seen in practically all our instruments, but only for a few days, for then they spread out enough to be seen as a straight line, crossing the planet's disk.

3 Times in 15 Years

If Saturn were revolving around the earth as a center every 29½ years, there would be just one occasion, each 15 years, when the rings would thus vanish. But the planet is going around the sun, and so are we, though in a much smaller circle. However, this means that ordinarily there is a group of three occasions when they vanish each 15 years. The earth passes through their plane, then we swing around in our orbit, and come back far enough to cross the plane again, then we swing forward, as seen from Saturn, and cross for the third time. By the time we swing back again the next year, Saturn has itself advanced so far that we do not reach the ring plane.

Back and Forth

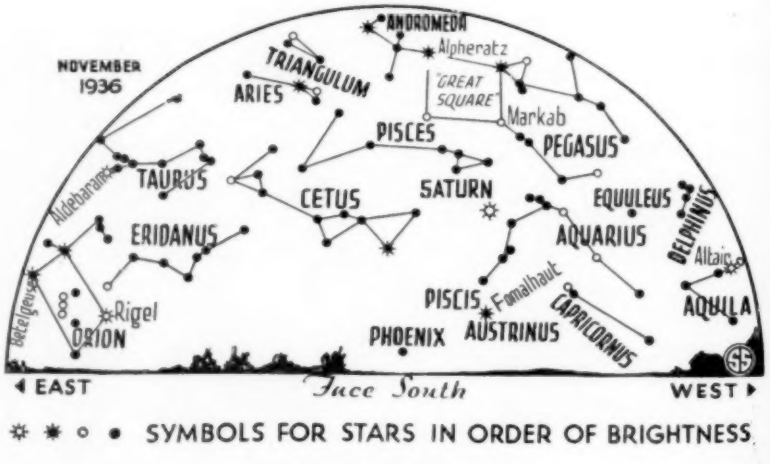
To picture the situation, we might imagine a man walking in a peculiar manner—ten feet ahead, five feet back, ten feet ahead, five feet back, and so on. Suppose his advance took him two feet past a doorway. He came through the portal, on his return he passes through it for a second time, and as he advances once more, he goes through for the third time. But now, picture him instead just reaching the doorway on his first advance. He is then in the "plane of the door," even though he does not go through. Then he goes back, and on his next advance he does reach the other side. In this way, he has only been in the doorway twice.

That is very much what is happening with the earth and Saturn this year. On June 28 we just reached the plane of the rings, and they disappeared from view. Now we have retreated and they are sufficiently spread out that they appear as a thin line crossing the planet's disk—like an orange with a knitting needle stuck through it. About the middle of this month, the earth will have swung back as far as it will go this trip, the rings will be spread out to their maximum (which will still not be very much) and we shall then start approaching the ring plane again. Next Feb. 20 we shall actually go through the ring plane, and after that, for 15 years, the southern surface of the rings will be exposed to our view.

During the past 15 years the northern surface is the one we have been seeing.

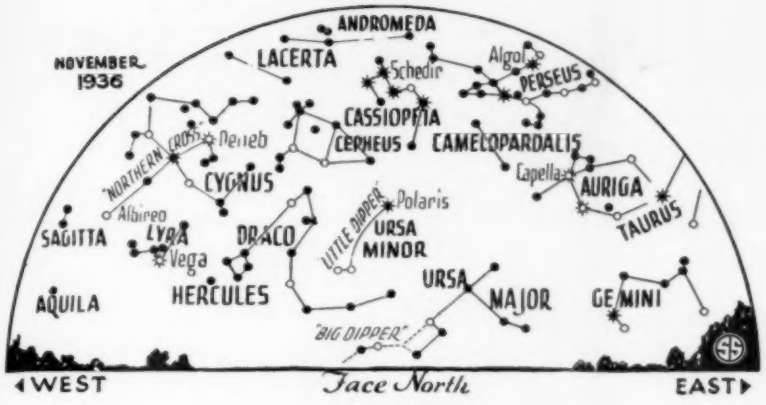
Orion Appears

For the first time since April, the maps accompanying this article show the appearance in the evening sky of what is generally considered the finest of the constellations visible from the United States—Orion, the great warrior. At the hours for which they are drawn (10:00 p. m., Nov. 1; 9:00 p. m., Nov. 15; and 8:00 p. m., Nov. 30) it is almost directly east, and can easily be recognized by the three stars in a vertical row, which form the giant's belt. As the stars rise about four minutes earlier each night, this group, and its brilliant neighbors, will become more easily vis-



BACK IN VIEW

For the first time since April, Orion, with its easily found belt of three stars in a vertical row, takes its place among the fine constellations visible during the evening hours.



FOUR NOVAE

You can locate the constellations of three of the four novae now visible by means of this map. Lacerta, Aquila, and Hercules are shown here; Sagittarius does not appear. But you will need some optical aid to look at the novae themselves.

ible during the coming months, until in January and February they will be seen throughout the evening. The two brightest stars in Orion are Rigel, to the right of the belt, and Betelgeuse, to the left.

Directly above Orion is the bull, Taurus, which has a V-shaped group of stars, the Hyades, outlining his face. A smaller cluster, the Pleiades, are still higher, in his shoulder. The brightest star of the Hyades, Aldebaran, represents the eye. North of Taurus is Auriga, the charioteer, with the first magnitude star Capella. Above Auriga is Perseus, the famous mythological hero.

Dipper Low

The Great Dipper, this month, is in its poorest position of the year, for it is just barely above the northern horizon. But Cassiopeia, next most familiar of these northern circumpolar constellations which never go below the horizon for most parts of the United States, is now at its best evening position. It has the shape of the letter M, and is nearly overhead, to the north. Half way between this and the Great Dipper is the Little Dipper, with Polaris, the Pole Star, at the end of its handle.

High in the west is the northern cross, part of Cygnus, the swan, in a nearly vertical position. Deneb is the brightest star in this configuration. It marks the top of the cross. Below the cross, and a little farther north, is Lyra, the lyre, with Vega, the brightest star visible at present, until Sirius rises late in the evening. South of Lyra is Aquila, the eagle, with another bright star, Altair.

Toward the southern skies, the great square of Pegasus is now in a prominent position. Only three of the four stars are in this group, however, for the one at the upper left hand corner, Alpheratz, is part of Andromeda. Immediately below the square is part of Pisces, the fishes, and below these stars the planet Saturn is visible. Another fish is still nearer the horizon, Piscis Austrinus, the southern fish, and a star called Fomalhaut.

In addition to Saturn, two other planets can be seen in the evening sky this month, though they set before the times of the maps. As dusk begins to fall, Venus will be visible in the southwest, near the horizon. It is so brilliant, about magnitude minus 3.5, in the astronomer's scale, that it will be the first star or planet to appear. Jupiter, inferior only to Venus in grandeur, is nearby. At the beginning of the month, it will be to the left of Venus. At 7:00 a. m., E. S. T., on Nov. 13, Venus will pass Jupiter, nearly four times the moon's apparent diameter to the south. After that, of course, Venus will be to the left. A fourth planet, Mars, is seen in the east later in the night, rising about 2:30 a. m., local standard time.

Moonlit Thanksgiving

The phases of the moon for November are indicated below. In the last half of the month we shall have moonlit evenings. The moon will be in apogee (farthest from earth) on the 12th, at 5:00 a. m., E. S. T., with a distance of 252,550 miles, and in perigee (nearest earth) on the 27th at 9:00 a. m., E.S.T., when it will be 222,400 miles from us. During the night of Nov. 16 the moon, a crescent three days past new, will pass Jupiter and Venus, so on that evening as well as the next the three conspicuous objects will furnish a beautiful spectacle as they appear lined up in the west. The moon passes a short distance to the north of Jupiter at 9:49 p. m., E. S. T., after it has set for the eastern part of the United States. It passes Venus at 6:00 a.m.

Phases of the Moon

	E. S. T.
Last Quarter	Nov. 5, 8:28 P. M.
New	Nov. 13, 11:42 P. M.
First Quarter	Nov. 21, 8:19 P. M.
Full	Nov. 28, 11:12 A. M.

Science News Letter, October 31, 1936

ENTOMOLOGY

Pests

"The awakened interest in forestry has manifested itself in renewed efforts in forest conservation and in the reforestation of denuded areas. Along with this there has, of course, been an ever increasing interest in the insect pests of our forests, for we now know that the insects rank with fire as important destructive factors in many of our large forest areas."—Doane, Van Dyke, Chamberlin and Burke in FOREST INSECTS (*McGraw-Hill*).

Science News Letter, October 31, 1936

Published November 1936

OUR NATURAL RESOURCES AND THEIR CONSERVATION

BY A. E. PARKINS, *Editor-in-Chief*
J. R. WHITAKER, *Associate Editor*
and 20 other contributors

Up until a few years ago there had been little thought of a planned preservation and restoration of our natural resources. And yet today, conservation is a field of endeavor of vast national import. It is a recognized fact that the occupation of this continent has been accompanied by an unprecedented destruction of the natural landscape, and present-day trends in governmental activity show an increasing awareness of the role of conservation in the welfare of the nation.

This new book, covering all phases of conservation, is the work of twenty-two specialists in the fields of geography, geology, economics, chemistry and zoology. It surveys the field of conservational theory and practice from a geographic viewpoint, with particular attention given throughout to the extent and distribution of our natural resources, and to their service in regional and national development.

This is a book for everyone interested in preventing waste or destruction of the natural resources of our country.

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ANTHROPOLOGY

Lusty Bone Gnawing Not Done At Banquets of Primitives

Men Have Probably Cut Their Meat Since Stone Age; Eskimo's Good Teeth Due to Diet, Not Mastication

THE CHARMING girl who gnaws a ham bone at the dinner party is not being sensibly primitive. Giving the teeth this sort of hearty work-out is not done in primitive society.

So the Arctic explorer, Vilhjalmur Stefansson, declared in an address at the annual banquet of the American Dietetic Association.

"Between the dentists and the Fletcherizers, we chew today far more than our primitive ancestors," he stated.

Dental reasoning, he said, has gone astray by assuming that the Eskimos, with their fine, healthy teeth, would chew at least as much as we. Then the argument is built up by picturing Eskimos as extraordinary chewers.

"The argument proceeds," said Mr. Stefansson, "that when people ate meat in the way illustrated by the charming girl, they developed and retained excellent teeth through much biting and chewing of tough and coarse food."

The point overlooked, he continued, is that primitive people have had tools since Stone Age days, and carnivorous primitives have one single method of handling meat, practically everywhere in the world.

The proper primitive way of eating was then shown by the explorer, who has lived for years among Eskimos, eating their meat diet:

"You take a good-sized piece of meat in your left hand and a knife in the right," he explained. "With your front teeth you nip lightly into the edge of the piece, just so you get a good hold, and then you cut in front of your lips. This piece of meat is not likely to be larger than the one you cut with knife and fork when you dine politely on a sirloin."

In actual fact, Eskimos chew their food less than almost any other people, said Mr. Stefansson, and their native meat diet does not massage their gums with coarse food. Yet not one cavity has been found in any tooth of any Eskimo who died before his food was Europeanized. The Eskimos are the only people known, past or present, who have this 100 per cent record of no decayed teeth.

Popular belief that Eskimos chew skins a great deal in preparing them for clothing, thus getting dental exercise, was declared "greatly exaggerated."

Attributing the Eskimo's good teeth to his diet, Mr. Stefansson said:

"All deficiency diseases seem always absent from people living wholly on meat. In view of much discussed theories it is well to specify that certainly there is never a case of scurvy and almost certainly never one of rickets. Tooth decay is absent, pyorrhea is rare or absent. Teeth when ground down, as by sand in dried meat, seem never to wear wholly down to the pulp so as to result in alveolar abscesses."

Cancer has probably never been reported from Eskimos still living on their native food, the explorer commented.

It is a reasonably sure conclusion, he declared, that "you can be healthy, and live at least the biblical three score and ten, on a vegetarian diet, on a meat diet, or on a combination of the two."

Science News Letter, October 31, 1936

The crop pest, bindweed or morning glory, defies drought because its roots, that spread even as long as 25 to 30 feet, store up so much food for hard times.

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● RADIO

November 3, 5:15 p.m., E.S.T.

SOUTH WITH THE BIRDS—Frederick C. Lincoln of the U. S. Bureau of Biological Survey.

November 10, 5:15 p.m., E.S.T.

HOW MUCH?—Ralph W. Smith of the National Bureau of Standards.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

PSYCHOLOGY

Use Hearing More Than Touch as Auxiliary Sense

HEARING takes the place of sight for the blind much more than does the sense of touch. So says Dr. Friedrich Mansfeld who is conducting experiments on the psychology of the blind in cooperation with Prof. Karl Buhler, internationally known psychologist of the University of Vienna.

Dr. Mansfeld has been blind himself since he was eight years old.

The blind man going along the street follows a pathway of familiar sound, Dr. Mansfeld explains. He hears street cars stopping here, running there, automobiles, birds in the trees, and the echo of his own footsteps from house walls, pavements, and other objects.

Every material sends back a distinctive sound in response to his step or his voice. As he passes through a room, he hears and recognizes the cupboard by its wood sound, the window by its glass tone.

There is also a peculiar intensity and quality of sound associated with each individual day which depends upon the weather or atmospheric conditions, according to Dr. Mansfeld. This he calls the "sound of the day."

Science News Letter, October 31, 1936

ETHNOLOGY

Indians Use 1112 Plants For Food; Made Jelly

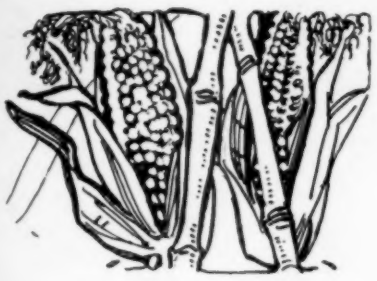
INDIANS of North America tasted, and found good for food, over a thousand of the plants on the continent.

No less than 1112 species of plants used in some way as food by Indians are listed in a new publication compiled by a chemist, Elias Yanovsky of the U. S. Bureau of Chemistry and Soils. The list includes ferns, algae, and fungi and shows that Indian cooks contrived fruit jellies, beverages, soups, breads, and other dishes.

Science News Letter, October 31, 1936

GENETICS

NATURE RAMBLINGS
by Frank Thone



Drought-Proof Corn

CORN better able to withstand droughts than any of the standard strains now in existence is held out as a definite possibility of the Shull-Wallace inbreeding technique, by Dr. Merle T. Jenkins of the Bureau of Plant Industry, writing in the U. S. Department of Agriculture's new-type annual report, the Yearbook of Agriculture, 1936. Disease, cold, and insect damage are other desirable qualities that may be put into corn by the newer method of breeding.

Modern corn breeding (and it is nowhere near being universally adopted as yet), depends on getting genetically pure lines of parent plants, each with one or several desired qualities certainly present — yield-abundance, or stalk-strength, or early ripening. The strains destined for such select parenthood are inbred for generation after generation, until they dwindle to runts that seem just about to perish on the poison of their own germ-plasm. Then they are interplanted with another line, embodying other desired qualities, and controlled cross-pollenation is permitted to occur.

And behold a race of giants springing from a parentage of runts! The combination of qualities planned for, plus the strange phenomenon of hybrid vigor (familiar, but little understood as yet), sends the new stalks higher than any of their ancestors, rustling with greener, broader leaves, burdened with heavier, more abundant ears.

First steps toward the new way in corn breeding were taken a generation ago, by Dr. G. H. Shull and Dr. E. M. East, working independently of each other, but using much the same methods. The first private breeder to produce inbred corn was H. A. Wallace of Des Moines, now Secretary of Agriculture. He began in a small way in 1913, but did not undertake larger-scale operations until 1919. Now the inbreeding technique is practised in experiment stations all over the country, and new commercial producers enter the field every spring.

Even without the benefit of deliberate breeding for drought resistance, the inbred-hybrid corn varieties have come through the drought-ordeals of 1934 and 1936 in better shape generally than the standard varieties produced by older breeding methods. This is due, perhaps, to the greater vigor that seems inherent in hybrids of all kinds. What corn purposely bred for drought-fighting purposes may do can only be conjectured, but the prospect seems hopeful.

The Yearbook of Agriculture, 1936, in which the new corn-breeding method is discussed, departs from earlier editions in that it is devoted entirely to the subject of the creative development of new forms of life through plant and animal breeding. Discussions range through all sorts of crops and animals, from corn and wheat to cotton and tobacco, with cattle, sheep, horses and other livestock to fill in the animal side of the picture.

Science News Letter, October 31, 1936

TECHNOLOGY

Cherry of Victory

"About a generation before the Christian era a Roman general conquered the last province of Asia Minor, which had held Rome at bay and had encroached on her principalities in northern Greece. To commemorate this victory, cherry trees—indigenous to the region—were taken to Rome. From them developed the domestic and wild cherry of Europe and America."—Malcolm H. Sherwood in FROM FOREST TO FURNITURE (*Norton*).

Science News Letter, October 31, 1936

INVENTION

Present Automobile Result of Some 100,000 Patents

THE newest 1937 streamlined automobiles soon to come to the market are the culmination of more than 100,000 individual patents, according to a search made by patent examiners in connection with the coming Centennial Celebration of the American Patent System on Nov. 23, 1936.

Science News Letter, October 31, 1936

Now Ready

FOOD FITNESS AND FIGURE

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to weight control and better health through SCIENTIFIC DIET . . .

by JACOB BUCKSTEIN, M.D. *Specialising Physician*

Introduction by Harlow Brooks, M.D.

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—if you are too thin
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—if you have diabetes
—if you catch cold frequently
—if you feel sluggish after eating
—if you suffer from heartburn, stomach distress or auto-intoxication
—if you have a bad complexion
—if your figure is unattractive
—if you lack "pep" or vitality
—if you take sick easily
—if you are losing needed weight
—if you have heart trouble; hardening of arteries
—if you have bad teeth
—if you often feel faint or dizzy
—if you are anemic
—if liver bothers you
—if you have dyspepsia
—if you are a slave to laxatives
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NOTE: Any of the above may be due to diet defects about which it is advisable to see your doctor.

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Additional Reviews On Page 288

Natural History

FRONTIERS, A MAGAZINE OF NATURAL HISTORY—*The Academy of Natural Sciences of Philadelphia,* 36 p., illus., Pub. 5 times a year, 35c a copy, $1.50 a year. A new natural history journal herewith makes its bow—and in right handsome and promising fashion, too. It is a good job any way you look at it—text and illustrations, typography and layout. Topping the contributor's column is J. N. ("Ding") Darling, with a characteristically energetic short article on migratory wildfowl. The cover picture, appropriately for the journal's name, is of a bison.

Science News Letter, October 31, 1936

Agriculture

YEARBOOK OF AGRICULTURE—U. S. Dept. of Agriculture—*Govt. Print. Off.,* 1189 p., $1.25. (See page 285.)

Science News Letter, October 31, 1936

Science

ANNUAL REPORT OF THE BOARD OF REGENTS OF THE SMITHSONIAN INSTITUTION FOR THE YEAR ENDING JUNE 30, 1935—*Govt. Print. Off.,* 580 p., illus., $1. (See page 276.)

Science News Letter, October 31, 1936

Agriculture

REPORT ON THE AGRICULTURAL EXPERIMENT STATIONS, 1935—Office of Experiment Stations—*Govt. Print. Off.,* 160 p., 15c.

Science News Letter, October 31, 1936

Biography

GEORG WILHELM STELLER, THE PIONEER OF ALASKAN NATURAL HISTORY — Leonhard Stejneger — *Harvard Univ. Press,* 622 p., $6. A carefully traced life pilgrimage of a strange man in a strange new country—for Steller went to Alaska in Bering's expedition, early in the eighteenth century, and spent practically all the rest of his days there, unsparingly driving himself into regions where it is still difficult to penetrate. The completeness and fulness of text and notes bespeak the thorough scholarship of the author.

Science News Letter, October 31, 1936

Science, Juvenile

MARVELS OF ACHIEVEMENT—John Alva Bassett—*Lynn Publishing Co.,* 77 p., 10c. The publishers had no way of knowing it, but this book fits in admirably with the coming centennial celebration of the American Patent System to be held on Nov. 23 next in Washington. For children of near high school age it reviews the great inventive developments of the modern world: the printing press, the steamboat, railroads, the telegraph and telephone, the automobile, the airplane, radio and television. Clever drawings add interest.

Science News Letter, October 31, 1936

Dendrology

OUR FRIENDS THE TREES—P. G. Cross—*Dutton,* 334 p., $5. This well-illustrated book, written by one who loves trees, understands trees, likes to plant trees, is calculated to make a disciple of every reader. It will appeal most, perhaps, to the home-builder in suburban or semi-rural areas, but the information it contains will also be found useful by many others.

Science News Letter, October 31, 1936

Health

HEALTH AND ENVIRONMENT, THE ELEMENTS OF SANITARY SCIENCE—Jean Martin White—*F. A. Davis,* 209 p., $2. This book was designed as a text for students of nursing but may well, as the author suggests, prove interesting to the lay reader.

Science News Letter, October 31, 1936

Physiology

FUNDAMENTALS OF HUMAN PHYSIOLOGY (4th Ed.)—J. J. R. Macleod and R. J. Seymour—*Mosby,* 424 p., $2.50. In this edition of a well-known text for college students Dr. Seymour, professor of physiology at Ohio State University, has added material on vitamins and endocrine glands to include recent developments in these fields of physiology and reduced the discussion of metabolism to limits suitable for the average student with an elementary knowledge of chemistry.

Science News Letter, October 31, 1936

Gardening, Juvenile

PETER AND PENNY PLANT A GARDEN—Gertrude and Frances Dubois—*Stokes,* 210 p., $1.25. Charmingly written in child-language, this little book will serve at once as a reader and a first guide to gardening for children. It begins with things that are done in gardens in autumn, and works through to late summer.

Science News Letter, October 31, 1936

Zoology

MAMMALS OF THE CHICAGO REGION—Tappan Gregory—*Chicago Academy of Sciences,* 75 p., illus., 50c. Compact, but complete for the region of which it treats, illustrated with lively black-and-white sketches and a number of half-tones.

Science News Letter, October 31, 1936

Photography

MODERN PHOTOGRAPHY — C. G. Holme—*Studio Publications, Inc.,* 111 p., $2.50 paper, $3.50 cloth. Sixth issue of this well-known collection of outstanding photographs. To the serious photographer the technical data giving type of camera, lens, film, aperture and exposure used for each picture will be important.

Science News Letter, October 31, 1936

Histology

A TEXTBOOK OF HISTOLOGY—Joseph Krafka, Jr.—*Williams and Wilkins,* 246 p., $2.50. The author, professor of microscopic anatomy at the University of Georgia School of Medicine, believes that histology, or microscopic anatomy, should be taught much earlier than it is. He would like to see it introduced into college curricula along with comparative anatomy, embryology and genetics, rather than have it reserved for medical school courses. He has written this text with such purpose in mind.

Science News Letter, October 31, 1936

Bibliography

BOOKLIST BOOKS-1935 — *American Library Association,* 63 p., 65c. This annual compilation of the year's best books needs no introduction to librarians; it is a useful tool which they will obtain as a matter of course. The general reader will be interested to know that it is a list of about 250 books, arranged conveniently by subject, with a brief description of each book to aid the reader. About 80 outstanding scientific books are listed.

Science News Letter, October 31, 1936

Eddington says that relativity is an artificial system. Support for that view will be found in simple non-mathematical terms in **"Some Enigmas of Modern Science" by Guy Clinton.** Price, bound in paper, 60 cents.

Published by author

Send order to Retail Book Dep't, Science News Letter, 2101 Constitution Ave., Washington, D. C.

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ELECTRIC SHAVERS

How do electric shavers compare with ordinary safety razors in the closeness of the shave, in freedom from irritation, in the time consumed in shaving, and in other important factors? For a comparison based on actual tests read the report on electric razors in the current issue of *Consumers Union Reports,* monthly publication of Consumers Union of United States. Of three nationally-advertised makes, including Schick and Packard, only one is rated as a "Best Buy"—the others as "Not Acceptable."

. . . MEN'S SHIRTS

Will unadvertised shirts selling at less than $1 wear as well as widely-advertised $2 brands? How do they compare on such points as shrinkage, color-fastness and ability to withstand laundering. These and similar questions are answered in a report on men's shirts based on wear and laundry tests and on fabrics and construction. *In terms of brand names,* ten brands of shirts are rated as "Best Buys," "Also Acceptable," and "Not Acceptable." Included in these ratings are such brands as Arrow, Van Heusen, CD, Montgomery Ward, and Sears Roebuck.

. . HOW TO BUY and USE FUEL

"Stick to stove coal and avoid trouble . . . buy No. 2 oil, No. 4 is too heavy for your type of burner," say many fuel dealers in response to queries about the most suitable types or grades of fuel. What do heating engineers say? *How to Buy Fuel* in this issue will tell you how to buy anthracite or bituminous coal, coke, or fuel oil, will show you how, by careful selection of coal and by skillful firing, you may be able to cut fuel bills 20 to 25 per cent.

. . TOOTH PASTES and POWDERS

Based on chemical and physical analyses and on investigations by *unbiased* authorities, a report in this issue tells which dentrifices are safe; which are injurious; whether powders or pastes are better, and what scientific bases there are for the claims made by dentrifice manufacturers. Fifty brands of dentrifices, including such widely-exploited brands as Pepsodent, Squibb's, Forhan's, Iodent, Ipana, Colgate and Dr. Lyon's, are rated.

ALSO RATED IN THIS ISSUE—on the basis of tests by *unbiased* specialists—are many brands of other products.

COMING IN NOVEMBER . . .

The November issue of *Consumers Union Reports* will report on radios, vacuum cleaners, wines and fountain pens and will rate as "Best Buys," "Also Acceptable," and "Not Acceptable" leading brands of these and other products.

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Additional Reviews On Page 286

Geology

DOWN TO EARTH—Carey Croneis and William C. Krumbein—*Univ. of Chicago Press,* 501 p., drawings by Chichi Lasley, rotogravure plates, $5. Here is something new under the sun: a book by two professors of geology that dares to be lively, interesting, and even occasionally humorous. Students using it as a text will not have to be given "assignments"; they will be much more likely to go joyously plowing through whole chapters on end. And the general reader, though he has no professor to guide him, will find himself doing the same thing. It is a triumphant demonstration that discussions of fossils do not themselves have to be fossilized.

Science News Letter, October 31, 1936

Engineering

TRAFFIC—Marion S. Lowndes and Frances N. Chrystie, photographs by John J. Floherty, designed by Jan C. Mayer—*Doubleday, Doran,* 32 p., photographs with text, $1. With good photography and a brief accompanying running story, this little book for children uses the device of taking one single day from the life of a gas station attendant to present a cross section of modern automotive transport in all its phases.

Science News Letter, October 31, 1936

Economics

AMERICA'S STAKE IN THE FAR EAST—Miriam S. Farley—*American Council, Institute of Pacific Relations,* 39 p., 25c. An economic study.

Science News Letter, October 31, 1936

Geology

INTERNATIONAL GEOLOGICAL CONGRESS: REPORT OF THE XVI SESSION, UNITED STATES OF AMERICA, 1933—*International Geological Congress, Washington, D. C.,* 2 vols., 1343 p., illus. and maps, $10 per set. Two thick volumes containing a wealth of geological fact and inference, as presented before the most recent of the world geological congresses. This set automatically becomes a necessity for all libraries that undertake to maintain a reasonable completeness in its particular subject.

Science News Letter, October 31, 1936

Entomology

HOW TO KNOW THE INSECTS—H. E. Jaques—*John S. Swift Company,* 140 p., $1. Sponsored by the Iowa Academy of Science, this book constitutes Biological Survey Publication No. 1. It augurs well for the series, for the volume is designed to convey essential information to elementary students, and to beginners working on their own, with clean-cut line illustrations. Although professing usefulness only in the state of Iowa, it will doubtless be found available over a much wider territory—the whole of the prairie region, at least. The text is planographed.

Science News Letter, October 31, 1936

Photography

PHOTOGRAPHY TO-DAY — D. A. Spencer—*Oxford,* 160 p., $1.50. Compressed in this single well-written book by Dr. Spencer is the how and why of modern photography. Hints on choosing cameras, developing and printing film are interwoven with much historical matter and plenty of straight science in the field of optics and light. An index is about the only thing lacking.

Science News Letter, October 31, 1936

Biology

THE EGGS OF MAMMALS—Gregory Pincus—*Macmillan,* 160 p., $3.75. Dr. Pincus' studies have attracted much interest among laymen as well as scientists, but this volume is a technical presentation for the scientific reader.

Science News Letter, October 31, 1936

Entomology

FOREST INSECTS—R. W. Doane, E. C. Van Dyke, W. J. Chamberlin and H. E. Burke—*McGraw-Hill,* 463 p., $4.50. The approach is primarily taxonomic: the principal enemies of forest trees are taken up, in their systematic order; for each, a brief, illustrated description is given, and its biology outlined. There are also chapters on methods of control, good bibliographies (by orders), and an appendix listing for various tree species the insects that attack it.

Science News Letter, October 31, 1936

Zoology

AFRICAN REPTILES AND AMPHIBIANS IN FIELD MUSEUM OF NATURAL HISTORY—Arthur Loveridge—*Field Museum of Natural History,* 111 p., 75c.

Science News Letter, October 31, 1936

Journalism

A HISTORY OF NEWSPAPER SYNDICATES IN THE UNITED STATES, 1865-1935—Elmo Scott Watson—*The Publishers' Auxiliary,* 98 p., illus., $1.50. Syndication is as typically American as apple pie and it is only in this country that newspaper syndicates flourish. This small volume gives hitherto inaccessible history. Readers of the SCIENCE NEWS LETTER will be interested in the author's evaluation of the place of Science Service in the world of newspapers: "The third decade of this century marked the beginning of a period of adding an even greater variety of 'big names' to the list of those whose writings the syndicates had made available to the newspaper reading public. But even more significant was the service of one of these organizations in 'bridging the gap between science and the public.' From time to time various syndicates had offered science features as a part of their service but they were either too 'popular' to be scientific or too technically scientific to be 'popular.' The need for features which would reconcile these differences was met on January 1, 1921, by the founding of Science Service."

Science News Letter, October 31, 1936

Geography

GEOGRAPHY OF LATIN AMERICA—Fred A. Carlson—*Prentice-Hall,* 642 p., 200 illus., School ed., $4., Business ed., $5. This is the first college textbook of its kind, surveying all South America, Central America, Mexico, and the West Indies, from the geographic standpoint. The main purpose of the book, Prof. Carlson explains, is to "establish a better understanding and appreciation of the countries of Latin America through the enumeration and interpretation of nature's conditions that have retarded or promoted their progress."

Science News Letter, October 31, 1936

Botany

FERNS OF NORTHEASTERN UNITED STATES—Farida A. Wiley—*American Museum of Natural History,* 98 p., $1. A slender, pocket-size manual, illustrated with line drawings.

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